February 27, 2003

Ezra Miller, University of Minnesota and MSRI

Combinatorial positivity by geometric degeneration

Polynomials that arise naturally in various branches of mathematics often have positive integer coefficients when expressed in terms of simpler polynomials such as monomials. One of the main goals of Algebraic Combinatorics is to prove positivity by exhibiting sets of objects counted by these coefficients. Geometers, on the other hand, usually prefer to prove positivity by intrinsic geometric arguments. Commutative Algebra has a habit of jumping into the fray as a language connecting geometry to combinatorics. I will illustrate what I mean by presenting recent examples of positive formulae, including the geometric, algebraic, and combinatorial viewpoints.